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ABSTRACT

After an attempt to initiate a viable Outdoor Education program in the early 1960s was abandoned, during the early 1970s the Faculty of Education at the University of Western Ontario created an optional, 20-hour credit course in Outdoor Education for teacher education majors, which now attracts about 200 students per year. Objectives for the Teacher Outdoor Education Courses are: to see and use the educational possibilities in a common natural or man-made area; to conduct competently a 2-hour session with one's peers in an area of choice; to participate as a teacher-assistant at one of the Outdoor Education centres, or one week at the Toronto Island Outdoor Natural Science School; to practice-teach for one or two weeks at an Outdoor Education Centre; to assist individual teachers in planning and conducting their outdoor education activities; to participate in a Weekend Residential Outdoor Education Workshop; and to have one's basic interest and philosophy for Outdoor Education deepened. Various methods are used to implement the objectives. Students participate in planning and scheduling course content. Class assignments promote the course objectives. Following the narrative section, a partial listing and brief description of the sessions offered is presented, including some subject-oriented and some multi-disciplinary topics for the K-13 spectrum. (CM)

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Teacher Education:

Learning to Use the Outdoors

A paper prepared for the International Symposium on

World Trends in Science Education.

Halifax, Nova Scotia, August 1979.

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June 29, 1979.

RC 013151

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Summary

For over twenty years, a small group of instructors at the Faculty of Education, The University of Western Ontario, has been instructing pre-service and in-service teachers in Outdoor Education. Much has been learned regarding ideas and strategies not only for the teaching and learning of the teachers, but for the teaching of their students in the schools of Ontario. This paper traces and describes our attempts to educate in and for the outdoors in the early 1960's, our current patterns and a brief description of some of the topics for outdoor teacher education. The problem of getting more teachers to use the real world in their teaching still remains, in spite of our many different attempts.

For thousands of years, good teachers have made use of the outdoors, and the term Outdoor Education should not be considered a novel one. Both Christ and Socrates taught in the outdoors and drew on natural examples to illustrate their ideas for their audiences. A few teachers today recognize the potency of using the outdoors in a variety of ways to enhance studies in various subject disciplines, but not enough do, and more teachers should be encouraged to use the outdoors.

Rationale for Using the Outdoors

For those teachers who do use the outdoors, the reasons why they do seem to fall into three categories, namely, reality, communication and social interaction. The outdoors offers reality to the learner in a way indoor settings cannot match. The communal life of the honey bee and its unique adaptations can best be learned by watching the bees leave the hive, visit flowers and return to the hive. Maple sap is best tasted at the site and first experiences in astronomy are best taught observing the heavens on a clear, cold night away from the classroom and a smog-filled city. Students of all ages sense a feeling of freedom in the outdoors and this feeling leads to a greater communication and understanding of other people. Social interaction takes place easier in the outdoors. We have seen people develop better attitudes to one another, particularly if the outdoors activity forces some cooperation such as making a fire and cooking a meal, skiing up a steep slope or attempting some initiative task such as a rope swing over a ravine.

Using the Outdoors

It seems that the outdoors can and is used by some classroom teachers for one or more purposes. The outdoors can be a place to collect data and information, or as a place to illustrate theories and principles developed in the classroom, or as a place to begin inquiry, or as a place to develop sensory awareness and aesthetics, or as a place for recreational activity.

Historical Perspective

Getting teachers to accept these ideas is easy; getting teachers to plan and organize and get their classes outside is not easy. Recognizing this problem in the early 1960's, a few of us in the Science Department began to make plans to involve all 800 of our student teachers in some outdoor experience. Previously, each of us had used the outdoors for single period field trips, but now we were looking at a whole day of field study. We soon realized that we needed a week to cycle all of the students through a program. A summer camp, about 20 km away from campus provided an ideal site because it contained an assembly hall, a mess hall, and an abundance of natural phenomena including a mixed forest, a fast stream community, open meadows, a gravel pit, a variety of soil profiles, and a variety of forbs. The rental of the camp-site and the bus charter fees were small problems, but larger problems loomed regarding teaching expertise in the outdoors. We did not know enough to teach anyone anything about the camp environment, so we employed a strategy that has been repeated many times since. We sought out resource personnel from our own university, other universities, and the community, and we learned along with our students. After a few days of listening and watching the expert pleistocene geologist (or whatever expert) and taking notes with care,

we arrived at a point where we felt we could handle a group in the gravel pit (or forest, or stream). The end result was that succeeding outdoor programs were handled by ourselves.

A new problem arose. It was the problem of environmental damage. Eight hundred students in a small trout stream, or in a bed of spring forbs was simply too many. Further, some of our students returned to the camp with their students the following year. It seemed that the student-teachers were comfortable with that particular location, knew something about it, and returned with their class. The camp idea was abandoned after its second year.

Current Practices

Partly because of the overuse of an area and partly to try to eliminate the idea that outdoor studies require a bus to get to some ideal spot, we decided to use the campus grounds and other areas within easy walking distance to more advantage. For the next 15 years, with a few bus trips, this use of local environment has been the pattern.

During the early 1970's, a credit course in Outdoor Education was created. The course was and still is an optional credit, and attracts about 200 students per year. One advantage to the creation of a voluntary credit is that one teaches to a group of people who want to be in your classes. The obvious disadvantage is that the students not part of the course may not gain attitudes to preserve our deteriorating environments on this planet.

The credit course in Outdoor Educaton, as are most credit courses in Curriculum Instruction, is 20 hours long. This means that one can meet the students ten times for a 2 hour time block. I wish it were longer! However,

students can take another 20 hours in Outdoor Education in the second term if they wish.

Now for the more practical ends of the course itself. Some objectives, methods, topics and learnings ought to be shared regarding the Outdoor Education courses here at Western.

Objectives for Teacher Outdoor Education Courses

1. To be able to see and use the educational possibilities in a common natural area (fencerows, gravel pit, stream, pond, woodlot, vacant lot, school yard).

2. To be able to see and use the educational possibilities in a common man-made area (museum, used car lot, graveyard, airport, dam, art gallery, market place, plaza).

3. To conduct competently a two-hour session with one's peers in an area of choice.
   (This means to survey the site, design suitable learning activities, choose and gather equipment, design, prepare and mimeograph worksheets, organize work groups, summarize findings, evaluate with the whole group the implications for using this area with a class).

4. To participate as a teacher-assistant at one of the Outdoor Education centres, or one week at the Toronto Island Outdoor Natural Science School.

5. To practice teach for 1 or 2 weeks at an Outdoor Education Centre.

6. To assist individual teachers in planning and conducting their outdoor education activities.

7. To participate in a Weekend Residential Outdoor Education Workshop.

8. To have one's basic interest and philosophy for Outdoor Education deepened.

Methods for Teacher Outdoor Education Courses

Over the years, I think I have been somewhat successful in meeting the objectives stated above. The following ideas represent some of the methods I have used to implement the objectives.

1. There is something very potent in the maxim "docendo discimus", (we learn by doing), and to this end I have the students teach one another. Two students might team up for their presentation to the rest of the students in the outdoors, using a topic of their choice. The topic is planned with me to build in a measure of success. There is no failure in this presentation because teaching to peers in a Faculty of Education is not a bad place to make their teaching mistakes, and it does give the confidence that teaching in the outdoors requires. It also develops some expertise in the teachers on an area previously unknown.

2. Students in most institutions seem to enjoy participating in the planning of the course content. On occasion I have asked students what sessions they would like to have presented. These have been posted on the chalkboard, and a choosing follows. A student might choose "farm study" because he has expertise in that area, and is willing to teach '*in situ*' to his peers, or a student might choose an unknown topic, e.g. the gravel

pit, because he wants to know more about it. Obviously this idea relates to the first method above in that one learns much by teaching it. Lately, I have been facilitating the process of choosing by projecting a transparency of some 50 topics ranging from the Edible Wild to Cross-Country Skiing and telling the students a little of each topic. Naturally, some want to cover all 50 topics, but time permits 10 only per term. A partial listing of outdoor topics and a brief description is included in this paper.

3. Students become involved in the course timetabling as well as course content. I present a calendar previously prepared, and they tell me when the topic should be posted. It is a small thing to choose a date for a topic, but the idea is generated that the students are part of the course design.

4. Assignments can also promote the objectives of the course. I have tried a number of schemes, and 2 of them seem to have held up under a barrage of criticisms. I may make the teaching presentation to their peers the course assignment, and include a participation mark. On other occasions, I have done the teaching in the outdoors, according to topics of their needs and interests, and assigned a life list exercise. Students begin a life list of some naturally occurring phenomena such as birds, snow crystals, plants etc. This exercise is much work, but the students with a view to knowing those objects well and becoming more comfortable to teaching something about them gained much satisfaction from their new-found knowledge.

5. Fortunately in Ontario, there are now many Outdoor Education Centres. This was not the case in 1960. After a student has spent some time at one of these centres either as a teacher-assistant (1 day per week for the academic year) or as a practice teaching experience, their enthusiasm for Outdoor Education is heightened. Not all students taking the Outdoor Education course choose to practice teach in the outdoors and for good reasons. Some realize they need further practice in regular classrooms. Others recognize how demanding teaching in the outdoors is, and opt for the regular classroom. This past year some 95 students did some practice teaching at a Residential Outdoor Education Centre. The practicum experience gives the student-teacher a chance to try some of the ideas learned from the Outdoor Education course, hear and try other ideas gained at the Centre, and to experience what a class is really like outdoors.

6. I receive many requests from professional teachers for help to implement various outdoor activities. A very recent telephone call went this way. "I need a student-teacher who knows something about soil. I have to teach it to my Grade 6 class." I bring these to the attention of my students and I can usually find a willing volunteer with some expertise in the area under study. I often plan the session with the student-teacher so that he can help the teacher with some confidence.

7. The Weekend Residential Outdoor Workshops over the past ten years have been a highlight of the Outdoor Education classes. In the beginning of these ventures, 3 faculty members planned and executed the whole program

but now, the students do everything. Food cooking, program, transportation, equipment, skits, evaluation are all handled by the students themselves. The weekend extends from Friday 1600 h to Sunday 1600 h and is usually held in the dead of winter. Accommodation has ranged from tents, to a 2-room school to an Outdoor Education Centre with a fully equipped dormitory, kitchen and classroom. The program starts with an overview on Friday evening, all-day field sessions on Saturday that deal in ecology and conservation, recreational activity, academic reports on their field work Saturday evening, and an additional field activity on Sunday. Further details on organizing and programming these weekends may be obtained by asking me.

8. Although the best text for a course in Outdoor Education is the direct study of the existing natural phenomena and their inter-relationships, a very useful guide is the pamphlets published by the Ontario Teachers Federation. They are Outdoor Education Manual Part 1, 2 and 3, and 200 Outdoor Science Activities.

Topics for Teacher Outdoor Education Courses

Only a partial listing and the briefest description of the sessions appears here. Some of the topics are subject oriented, and others obviously are multi-disciplinary. Suffice to say, also, that the topics range the K-13 spectrum and thus some are more suitable for one age group than another. Some of the topics will stand on their own and are not directly related to any area of the curriculum of the schools, but it is my hope that a student could use the topic to fit into a unit of study in some way. Thus the topic, "Edible Wild" listed below, might find its way as part of the learning

experiences on Pioneer Life (a unit of study for Grade 8 History classes). Each of the sessions takes about 2 hours with pre-service students.

1. Edible Wild

   Identification, collection and preparation of edible wild plants found within walking distance of the campus. Rationale, uses, dangers, history for edible wild plants is developed.

2. Making and Using a Nature Trail

   Various techniques of relating information along an existing trail are examined. Students then design a 5 station trail using 5 different teaching techniques, and put a group of peers through their trail.

3. Orienteering

   Becoming familiar with reading a bearing, following a bearing, compass games, designing a 3 point course, designing a 5 point course, then testing a course with a peer, followed by trying an existing orienteering course of a professional nature.

4. Geology in a Gravel Pit

   Description of the materials found in a gravel pit both qualitatively and quantitatively. Collecting information regarding origin of material, bedding, sorting, erosion and sedimentation.

5. Aquatic Organisms

   Collection, identification, classification of aquatic organisms in a stream community. Relationships studied regarding habitat, environment, ecological niche. Relationship to water quality.

6. Woodlot Studies

Quadrat analysis, succession, value of woodlot, presence of wildlife, relationship of flora to soil type.

7. Soil Profiles

Examination of soil profiles in various locations to note differences in horizons and reasons for apparent changes. Chemical and physical analysis of soil samples.

8. Life in a Indian Village

Visit to a recreation of a Neutral Indian village (Ska-Na-Doht, Delaware, Ontario), to discuss the reasons for location, methods of food getting and storing, defense and the role of these Indians during the 1700's.

9. Pioneer Life

Active participation in log cabin building, making butter, bread and apple cider. Demonstration of pioneer skills at one of the local pioneer sites. Examination of pioneer artifacts.

10. Farm Study and Farm Comparison

Choice of one of the following sites (1) tobacco farm, (2) fruit farm, (3) beef farm, (4) trout farm, (5) seed research station, (6) nursery, (7) greenhouse, (8) mixed farm with a view to collecting information on its history, products, problems, and economics. Findings are shared orally after the visits.

11. Small Plant Sampling

A variety of techniques for conducting small plant vegetation patterns including quadrats and transects is demonstrated. Use of the school lawn in finding vegetation patterns.

12. Meteorology

Introduction to the weather instruments, collection of data, comparison to the day's weather map and predictions for the next day's weather. Mini-climates and local variations are observed.

13. Using the School Grounds

Exploration of a number of exercises for using the school grounds including use of the trees, the idea of camouflage, initiative tasks, small plant patterns and sensory awareness.

14. Trees on the Grounds

Collecting information on the leaf, bark, fruit, twig, shape, bud, with a view to accurate classification and value to one's property.

15. Bird Behaviour

Using binoculars, collecting information on flight patterns, inter-species relationships, territorial actions, boundaries, location of nests and songs.

16. Animal Homes and Tracks

Attempts to solve the mysteries of "Who goes there?", "Where are you going?", based on the evidence of tracks, tunnels, burrows, scats or scrub damage. Plaster casts of tracks are made.

17. Power Skating and Games on Ice

Power skating drills and patterns to make stronger ice skaters. Games to develop skating ability and coordination.

18. Snow and Ice Study

Study of the crystal structure of snow and its restructuring after it reaches the surface of earth. Structure of a drift, temperature changes, insulating effect, metamorphism and water retention.

19. Sifton Botanical Bog

Examination of the origin and present natural history of an evolving kettle lake. Succession, rare flora, vandalism, past uses of the area, preservation attempts are observed.

20. Maple Sugar Bush

Visit to an active operation to see various methods of collection, evaporation, marketing of the sap products. Identification of the sugar maple, problems in production, economics of producing maple sugar.

21. Survival Game

A very active and strenuous game in which students play the roles of carnivores, herbivores and omnivores so that various ecological relationships can be illustrated and acted out.

22. Initiative Tasks

Various tasks are given to small groups of people to solve so that

group planning, cooperation, pride and encouragement is developed. Tasks may be solved creatively and group effort is timed and evaluated.

23. Animal Behaviour

Collecting information from a variety of animals on how they behave as a result of certain non-painful stimuli. Zoo animals are usually studied for this exercise.

24. Outdoor Sketching

Introduction to various media and techniques suitable for use in the outdoors. Attention given to various lines, patterns, designs, rhythms in warm-up exercises, then much time allowed to sketch something of interest.

25. Mapping and Profiling in the Outdoors

Various techniques demonstrated for mapping such as plane table, grid, triangulation, line and offset, and for profiling using simple surveying equipment.

26. The Airport

Visits to the control tower, weather office, customs office, ticket office, airport manager and the local flying club to find out more of the operations of an airport. Publicity flight arranged.

27. Using a Museum

A variety of strategies are examined to use a museum including

conducted tour, question and answer sheet, self-guided tour and teaching stations.

28. Visit to the Art Gallery

Viewing of the current showings and of the permanent collection. Finding out current loan plan for selections and details of the guided tour. Interpretation of elements of design, rhythm, texture, etc.

29. Shopping Plazas/Malls

Examination of the reasons for location, interview manager regarding problems, economics, peak times. Inventory of products, services, stores.

30. The Graveyard Story

Correlations of past to present, population shifts, changes. Study of the origin of pioneers, type of stone, symbols, shape of monuments, burial vs cremation, location of site, and family trees.

31. Pollution Control Centre

Visit to the local pollution control centre to find out how and why local sewage is processed. Examination of problems of overload, chemical additons, newspapers for fuel, etc.

32. The Marketplace

Collection of information regarding products and sources of the local farmer's market. Rental fees, parking problems, analysis of who tends to shop here, busy hours, interview manager, etc.

33. The Interpreted Ramble

Interpretations of flora and fauna along a nature trail as seen through the eyes of a naturalist.

34. Insects

Various devices and techniques to capture and collect insects. Calculation of population densities. Mounting, preserving, displaying for permanet collections. Activities for study.

35. Snowshoeing

Purpose, types, weight ratios, history of snowshoes. Demonstration regarding use and bindings. Active use of the snowshoe using games and a trail.

36. Cross-Country Skiing

Purpose, types of skiis, waxing techniques. Demonstrations and practise of cross-country ski techniques for hills and flat areas.

37. River Banks

Study of the river environment as it courses through London, Ontario. Study of water quality changes, flora and fauna relationships, historical development of the city.

38. Horseback Riding

Conformation, tack and saddling procedures. Riding techniques and trail etiquette. Practice riding with various speeds, obstacles and turns.

39. Canoeing

Historical perspectives, canoe design and types. Demonstration and practice of various strokes, control movements, safety procedures, portaging.

40. Ice Fishing

Demonstration and practice of various types of gear and warning systems. Keeping warm on the ice, safety, preparing the opening.

41. Fencerow Patterns

Study of the flora and fauna as it exists along a fence. Historical and future patterns. Value of fencerows regarding crops, erosion, aesthetics.

42. Population Densities

Capture and recapture techniques for small rodents and/or insects. Safe marking and application of the Row-Peterson index for calculation of densities.

43. Science in a Vacant Lot

Study of the establishment of plant and animal communities allowed to develop in vacant areas. Succession, mini-climates, soil profiles are also examined.

44. Dressing for the Outdoors

Rationale for dressing in certain ways to maintain heat and guard against loss of body heat through radiation, conduction and convection.

45. Greenhouses and Nurseries

Examination of the various operations of the greenhouse or nursery from seed germination, through hardening processes to sale and planting of plants. Care of plants, problems, potting soils are also studied.

46. Geology of London

Bicycle tour of the pleistocene deposits in and around the city. Tour includes visits to kettles, eskers, kames, moraines and abandoned shore line.

The Remaining Problem

In a recent survey of mine, I asked a large group of teachers why greater use was not made of the outdoors. A partial listing of their answers follows:

- not enough time to accomplish something in 40 minutes
- high class numbers make management difficult
- lack of resource personnel, teacher background, teacher expertise and methods for outdoor work
- liability for accidents in the outdoors
- knowledge lack of what equipment to use
- lack of good weather

- lack of suitable area to use for field work
- not knowing how to motivate students for field work.

I think there are some answers to these objections made by teachers, but I wish I had more. Successful ventures have included teaching the class myself, with the classroom teacher assisting. Sometimes the classroom teacher feels more comfortable as a result and is able to repeat the session with another class. Guidebooks, including 35 mm slides and suggested outdoor activities have also been prepared by myself and others, distributed to teachers but these have had limited success. One simply cannot make teachers use them or make them use the outdoors.

Conclusions and Recommendations

The inclusion of outdoor education courses ought to be considered by every teacher education institute, if we want the professional teacher to use the outdoors as part of the school curriculum. At the very least, each course in a teacher education institution ought to consider an outdoor education component. The benefits accrued by the pre-service teacher in an experience such as an outdoor residential weekend, whether the student is an outdoors type or not, are many. There is a strong chance of new insights about the environment being made than had one not attended such a weekend. Experiences in, for, and about the outdoors usually generates an appreciation for the outdoors.

For the practicing teachers, attempts still need to be made to meet their objections about not using the outdoors, so that there might be developed in their students knowledge of the world's ecological problems such as overpopulation, deterioration of environment, pollution, radioactive fallout and urbanization. Unless there is an appreciation of the outdoors

including the ecology of nature and man, we will continue to do violence to ourselves and the world about us.

Annotated Bibliography

Benton, A. H., and W. E. Werner, 1697, Manual of Field Biology and Ecology, Minneapolis, Minnesota, Burgess Pub. Co.

Tips on using the equipment required for collecting specimens, field techniques and very useful data sheets.

Hammerman, D. R. and W. H. Hammerman, (ed) 1968, Outdoor Education: A Book of Readings, Minneapolis, Minnesota, Burgess Pub. Co.

This book captures the flavour of the outdoor education movement. Good for developing meaning, scope, rationale and philosophy of outdoor education.

Hammerman, D. R., 1973, Teaching in the Outdoors, Minneapolis, Minnesota, Burgess Pub. Co.

An effective guide to teaching outdoors by suggesting methods and content. A very informative chapter on teaching outdoor education.

Mand, C. L., 1967, Outdoor Education, New York, J. Lowell Pratt and Co.

Shows how to use the outdoors for a variety of subject areas and how to develop school outdoor laboratories.

Ontario Teachers Federation, Outdoor Education Manual: Parts 1, 2 and 3, 1979, Toronto, Ontario

Ontario Teachers Federation, 200 Outdoor Science Activities, 1969 Toronto, Ontario

These 4 pamphlets are excellent because of the many ideas for outdoor activities and appropriate worksheets.

Smith, J. W. et. al., 1969, Outdoor Education, Englewood Cliffs, New Jersey, Prentice-Hall Inc.

A good guide for providing learning experiences in the outdoors and teaching the skills for outdoor living. Develops the ideas of education in and for the outdoors.

Swan, M.D. (ed), 1970, Tips and Tricks in Outdoor Education, Danville, Illinois, Interstate Printers

A useful assortment of ideas, plans and guides for providing outdoor learning experiences.

Biography

Professor Bain has been teaching pre-service and in-service teachers for 15 years. The past 6 years have been at The University of Western Ontario. His previous teaching was done in the elementary and secondary schools of Hamilton, Ontario, in the areas of Science and Mathematics. He has had a life-long interest in the outdoors and his current teaching role is Outdoor Education. His interests include golf, swimming, cross-country skiing, photography, and bird watching.